

PATENT
ATTORNEY DOCKET NO. DIVER1230-1
(09010/045001)

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REMARKS

The Advisory Action mailed April 9, 2002 indicates that the amendments contained in the Response to the Final Office Action filed on January 3, 2002 were not entered.

Claims 1-12 were pending before this Second Supplemental Response. By the present communication claims 1, 2, 5, 10 and 11 are amended as shown in attached Exhibit A to claim Applicant's invention with greater particularity and no claims have been added or cancelled. The amendments add no new matter, being fully supported by the Specification and pending claims. Applicant submits that the claim amendments do not narrow the claims in any way within the meaning of Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki Co. Ltd., a/k/a SMC Corporation and SMC Pneumatics, Inc. 234 F.3d 558, 51 U.S.P.Q. 2d 1959 (Fed. Cir. 2000). Accordingly, claims 1-12 are currently pending. It is respectfully submitted that the proposed amendments submitted herewith would place the claims in condition for allowance or at least in better condition for appeal; accordingly, entry of the amendments is respectfully requested.

The Objection to the Claims

Applicants traverse the objection to claims 1-11 as being informal in allegedly reciting a "semicolon" in the phrase "; wherein the polynucleotide encodes a polypeptide having activity as a thermostable phosphatase" allegedly introduced by amendment in claims 1, 2, 5 and 10 in the Response to Office Action mailed herein on May 23, 2001. In amended claims 1, 2 and 5, the semicolon in the phrase at issue, where it has been retained (claim 1) or introduced (claim 2),

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refers to all of the foregoing elements (a), (b) and (c). Where the semicolon has been replaced by a comma (claim 5), the following clause pertains solely to the element of the claim in which it is found. In addition, Applicants respectfully submit that the subject phrase was not introduced by amendment to claim 10 or claim 11 and claims 10 and 11 do not now contain the subject phrase. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to claims 1-11 as allegedly containing the said informality.

The Rejection Under 35 U.S.C. § 112, Second Paragraph

The Advisory Action mailed April 8, 2002 (Paper No. 25) asserts that deletion of the phrase "the group consisting of" as proposed in the Supplemental Response, would cause lack of clarity. Applicants disagree; however, to expedite prosecution and reduce the issues, in the proposed amendment contained in the present communication, Applicants do not delete the phrase at issue.

In addition, Paper No. 25 asserts that the proposed amendment of claims 1 c) and 2 c) reciting "... polynucleotide of (a) or (b) encodes a polypeptide having activity as a thermostable phosphatase ..." is unclear because a polynucleotide complementary to a sequence that encodes a thermostable phosphatase does not have activity as a thermostable phosphatase. Accordingly, claim 1(c) has been amended to recite that the complementary polynucleotides hybridize to and hence identify a polynucleotide that encodes a polypeptide having thermostable phosphatase activity. Claim 2 (c) has been amended to recite "fragments complementary to the polynucleotide of a) or b)" that "specifically identify DNA which encodes a thermostable phosphatase by hybridizing thereto." Similarly, claim 5(c) has been amended to recite a

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complementary fragment "comprising at least 15 contiguous bases of the polynucleotide of (b)" that identifies a polynucleotide of (a) by hybridizing thereto. Claims 10 and 11 do not recite any complementary DNA. Thus, in view of the amendments to claims 1, 2, and 5, all claims that recite "hybridization" language clearly state that a complementary nucleic acid sequences hybridizes to a sequence that encodes an invention thermostable phosphatase, thus clarifying the functional language in the claim.

In Paper No. 25, with reference to the phrase "enzymatically active fragments thereof" as alleged used in claims 2 and 5, the Examiner asserts that it is unclear how "portions (a) and (b)" can encode anything other than the full length molecule (i.e. a thermostable phosphatase). Applicants disagree with this interpretation of the proposed claim language. Claim 5 does not contain the phrase "enzymatically active fragments thereof" and the phrase has been deleted from claim 2, as presently amended. Thus, Applicant submits that any alleged lack of clarity regarding the phrase "enzymatically active fragments thereof" is now moot.

In addition, the Examiner asserts that proposed insertion of the phrase "and encodes a thermostable phosphatase" at the end of element (a) in claim 5 would introduce an alleged lack of clarity. By the present communication, the proposed amendments to claim 5 have been revised to recite: "wherein said sequence is obtained from Ammonifex degenesii KC4, which sequence encodes an enzyme having thermostable phosphatase activity." Thus, the presently proposed language clarifies that the Ammonifex degenesii KC4 DNA encodes an enzyme having thermostable phosphatase activity.

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The Advisory Action further asserts that the amendments proposed to claim 10 "to refer to claim 1 (a) and (b) but only contain portions (c) and (d) is unclear" (Paper No. 25, page 3). Apparently, since claim 1 already recites elements (a) and (b) in a Markush group, the Examiner is objecting to reference to (a) and (b) again in dependent claims that introduce additional elements of the Markush group. However, Applicants disagree that it would be more clear to include polypeptides in the Markush group of claim 1, which recites polynucleotides.

According to M.P.E.P. Section 3173.05(b) alternative claim language using "or" is an acceptable alternative to Markush group language:

Alternative expressions using "or" are also acceptable, such as "wherein R is A, B, C, or D." The following phrases were each held to be acceptable and not in violation of 35 U.S.C. 112, second paragraph in In re Gaubert, 524 F.2d 1222, 187 USPQ 664 (CCPA 1975): "made entirely or in part of;" "at least one piece;" and "iron, steel or any other magnetic material."

(M.P.E.P. Section 3173.05(b)). Therefore, to completely remove all ambiguity regarding the Markush group language therein, claims 10 and 11 have been amended to remove Markush language therefrom. Instead, claims 10 and 11, as amended by the present communication, recite polypeptides in alternative claim language by reciting polypeptides having an "an amino acid sequence as set forth in SEQ ID NO:28, or at least 30 contiguous amino acid residues of thereof" (claim 11) and a "thermostable phosphatase comprising an amino acid sequence which is at least 70% identical to an amino acid sequence as set forth in SEQ ID NO:28, or at least 30 contiguous amino acid residues of thereof" (claim 10).

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In view of the above amendments and remarks, Applicants submit that all pending claims meet the requirements under 35 U.S.C. § 112, Second Paragraph and reconsideration and withdrawal of the various rejections are respectfully requested.

The Rejection Under 35 U.S.C. § 112, First Paragraph

Applicants respectfully traverse the rejection of claims 1-11 under 35 U.S.C. § 112, First Paragraph, for containing subject matter for which the Specification allegedly fails to provide an enabling disclosure. Applicants disagree with the Examiner's assertion that "...polynucleotides which do not themselves encode a thermostable phosphatase, but merely hybridize to a polynucleotide which encodes a thermostable phosphatase, do not themselves have a defined function" (Office Action, page 3). Similarly Applicants disagree with the Examiner's assertion that polynucleotides which comprise 15 contiguous bases of a polynucleotide that encodes an invention thermostable phosphatase or 30 contiguous amino acids of a polypeptide sequence, such as SEQ ID NO: 28, are not considered to be adequately described with respect to structure (Office Action, page 4). Applicants respectfully submit that the specific function the invention polynucleotides fragments, which are complementary to a sequence that encodes the invention enzyme, is to *hybridize to and thereby identify* a polynucleotide that encodes a thermostable phosphatase. Those of skill in the art will recognize that a polynucleotide complementary to the sequence that encodes an invention enzyme will hybridize to such a sequence. In addition the complementary sequence and fragments of at least 15 contiguous bases of a nucleotide sequence that encodes an invention enzyme have specific utility and function in an assay as a probe for identifying a nucleic acid sequence that encodes such a phosphatase. All claims have

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accordingly been amended to explicitly recite this implicit nexus between sequence (structure) and activity (function).

Similarly, Applicants respectfully traverse the Examiner's assertion that the recitation of 30 contiguous amino acids of SEQ ID NO:28 in claim 10 does not define a sequences whose distinct structural limitations can be readily understood by those of skill. Applicants respectfully submit that those of skill in the art would understand that the recitation of 30 contiguous amino acids of SEQ ID NO:28 provides a *plurality of* sequences with phosphatase activity, with each sequence being particularly defined structurally with reference to a contiguous segment of SEQ ID NO:28, which Applicants have provided. The plurality of sequences includes any 30 contiguous amino acids of SEQ ID NO:28 (structural definition) and each has phosphatase activity (functional definition). Thus as presently claimed, the 30 continuous amino acid sequences of claim 10 have a nexus of structure and function.

Accordingly, in view of the above amendments and arguments, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 2, 5, 10 and 11 under 35 U.S.C. § 112, First Paragraph.

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In view of the above amendments and remarks, Applicants respectfully request entry of the amendments and passage of claims 1-12 to allowance. If the Examiner would like to discuss any of the issues raised in the Office Action, Applicants' representative, Lisa A. Haile, J.D., Ph.D., can be reached at (858) 677-1456.

Respectfully submitted,

Date: May 30, 2002



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Enclosure: Exhibit A

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EXHIBIT A

The marked-up version of the amendments

Please amend claims 1, 2, 5, 10 and 11 as follows:

1. (Thrice Amended) An isolated polynucleotide selected from the group consisting of:
- (a) a polynucleotide encoding a thermostable phosphatase comprising an amino acid sequence as set forth in SEQ ID NO:28;
 - (b) a polynucleotide which is complementary to the polynucleotide of (a); and
 - (c) a polynucleotide comprising at least 15 contiguous bases of the polynucleotide of ([a]b);

wherein the polynucleotide of (b) or (c) [hybridizes to], but not (a), identifies a polynucleotide that encodes a polypeptide having thermostable phosphatase activity by hybridizing thereto.

2. (Thrice Amended) An isolated polynucleotide selected from the group consisting of:
- (a) SEQ ID NO:19;
 - (b) SEQ ID NO:19, where T can also be U; and
 - (c) fragments complementary to the polynucleotide of a) or b) that are at least 15 contiguous bases in length and that [will hybridize to] specifically identify DNA which encodes [the amino acid sequence of SEQ ID NO:28] a thermostable phosphatase by hybridizing thereto[.];
- wherein the isolated polynucleotide of (a) or (b), but not (c), encodes a thermostable phosphatase [, or an enzymatically active fragment thereof].

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5. (Thrice Amended) An isolated polynucleotide [encoding a thermostable phosphatase, or an enzymatically active fragment thereof,] comprising [a polynucleotide having at least 70% identity to] a member selected from the group consisting of:
- (a) a polynucleotide [encoding an enzyme encoded by the DNA] having at least 70% identity to a polynucleotide sequence contained in ATCC Deposit No. 97379, wherein said [enzyme] sequence is obtained from Ammonifex degensii KC4, which sequence encodes an enzyme having thermostable phosphatase activity;
 - (b) a polynucleotide complementary to the polynucleotide of (a); and
 - (c) a polynucleotide comprising at least 15 contiguous bases of the polynucleotide of ([a]b);], wherein the polynucleotide [has thermostable phosphatase activity] identifies a polynucleotide of (a) by hybridizing thereto.
10. (Thrice Amended) A thermostable phosphatase of which at least a portion is encoded by a polynucleotide of claim 1[, and which is selected from the group consisting of:
- (a) a] said thermostable phosphatase comprising an amino acid sequence which is at least 70% identical to an amino acid sequence as set forth in SEQ ID NO:28[; and
 - (b) a thermostable phosphatase which comprises] , or at least 30 contiguous amino acid residues [of the enzyme of (a)] thereof and having activity as a thermostable phosphatase.

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11. (Thrice Amended) An enzyme of which at least a portion is encoded by a polynucleotide of claim 1, [and which is selected from the group consisting of:
- (a) a thermostable phosphatase] said enzyme comprising an amino acid sequence [selected from the group of amino acid sequences] as set forth in SEQ ID NO:28;
 - and
 - (b) a polynucleotide encoding a thermostable phosphatase which comprises] , or at least 30 contiguous amino acid residues[of the enzyme of (a)] thereof, and having activity as a thermostable phosphatase.